Small Business Innovation Research/Small Business Tech Transfer

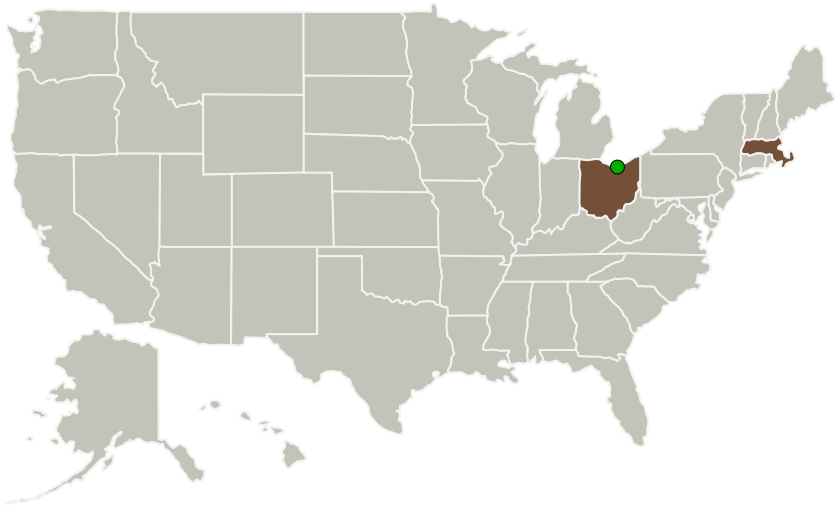
Thin Aerogel as a Spacer in Multi-Layer Insulation for Cryogenic Space Applications, Phase I

Completed Technology Project (2012 - 2012)

Project Introduction

Long duration storage of large quantities of cryogenic fluids for propulsion, power, and life-support is an essential requirement for long-term missions into space. The behavior of active and passive cryogenic fluid management (CFM) is paramount to the reliability of a spaceship and cryotank storage. Therefore, efficient and reliable insulation materials are key to the success of space missions. Aspen Aerogels proposes to develop a Multi-Layer Aerogel Insulation (MLAI) system to meet NASA's CFM needs. Aerogel has been demonstrated to be more durable and reliable than MLI, at a lower weight and reduced cost with comparable thermal performance. During this program, Aspen Aerogels will validate the key process step for a next generation aerogel manufacturing technology to enable the fabrication the proposed aerogel material. This new process is also expected to enable cost reduction of aerogel materials in general, a requirement to penetrate larger commercial thermal insulation markets. Development of the proposed MLAI system will provide NASA with a long-term CFM solution for space applications.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Aspen Aerogels, Inc.	Lead Organization	Industry	Northborough, Massachusetts
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137655)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Aspen Aerogels, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

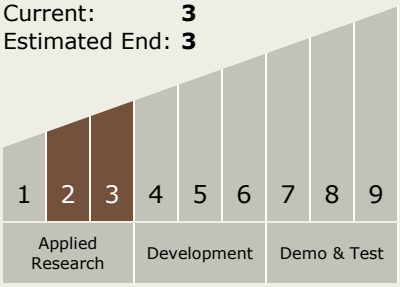
Carlos Torrez

Principal Investigator:

Redouane Begag

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System